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TRANSMITTAL OF APPEAL BRIEF (Large Entity)

Docket No.
121056-009

In Re Application Of: **Yasushi KOHNO et al.**

Serial No. 09/837,020	Filing Date April 18, 2001	Examiner Andrea Valenti	Group Art Unit 3643
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Invention: **METHOD OF PREVENTING DEFECTIVE GERMINATION OR GROWTH OF PLANT**

TO THE COMMISSIONER FOR PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed on September 23, 2003

The fee for filing this Appeal Brief is: **\$330.00**


- ☐ A check in the amount of the fee is enclosed.
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Applicant(s): Yasushi KOHNO et al.

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April 18, 2001

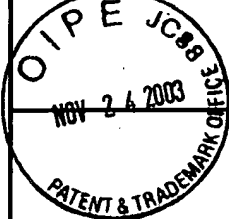
Examiner

Andrea Valenti

Group Art Unit

3643

Invention: METHOD OF PREVENTING DEFECTIVE GERMINATION OR GROWTH OF PLANT

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group

Art Unit: 3643

Attorney

Docket No.: TKA0028

Applicant: Yasushi KOHNO et al.

Invention: METHOD OF PREVENTING
DEFECTIVE GERMINATION
OR GROWTH OF PLANT

Serial No: 09/837,020

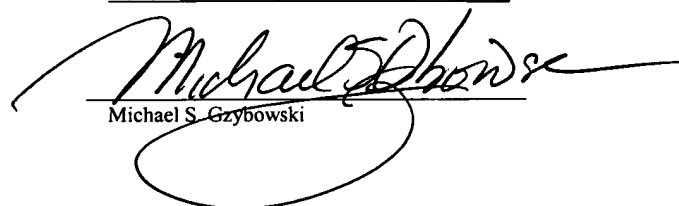
Filed: April 18, 2001

Examiner: Andrea Valenti

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Michael S. Gzybowski

BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
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Sir:

Further to Appellants' Second Notice of Appeal filed September 23, 2003 in connection with the above-identified application, appellants submit the present Brief on Appeal.

REAL PARTY IN INTEREST

Appellant has assigned this application to Agritecno Yazaki Co., Ltd. in an assignment which was executed by the inventors on April 6, 2001, and filed in the United States Patent and Trademark Office on April 18, 2001, and recorded on April 18, 2001 at Reel No. 011723 and Frame No. 0926.

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RELATED APPEALS AND INTERFERENCES

There are no related cases involved in any appeal procedures or Interferences.

STATUS OF CLAIMS

Claims 1-13 are pending in this application. Claims 1-13 stand under Final Rejection, from which rejection of claims 1-13 this appeal is taken. No other claims are pending.

STATUS OF AMENDMENTS

Upon submitting a Brief on Appeal on June 9, 2003 appellants received a Final Rejection of August 15, 2003 from the examiner in charge of the application. In response to the Final Rejection appellants submitted an Amendment After Final which, in the Advisory Action of October 9, 2003, the examiner indicated would be entered

SUMMARY OF INVENTION

The present invention is directed to a method of preventing defective germination of plant seeds or growth of plants.

As set forth in the paragraph bridging pages 2 and 3 of appellants' specification, the method comprises the steps of: encapsulating one or more plant seeds in an aqueous gel capsule;

refrigerating the encapsulated plant seed(s) under conditions in which the encapsulated seed(s) will not germinate; and sowing the plant seed(s).

Other embodiments of appellants' invention, as listed on page 3, lines 6-10 include: the size of the seeds is equal to or less than 1 mm; the refrigeration process is carried out in a dark place; the plant seeds are those of a light germinator; and the seed encapsulated in the aqueous gel capsule is a pelletized seed.

As discussed in the paragraph bridging pages 4 and 5 of appellants' specification, if the seeds are allowed to germinate during the refrigeration process, the germ or root that comes out of the gel capsule is likely to be damaged during subsequent handling and sowing.

Comparative test results which are provided in appellants' examples on pages 6-8 demonstrate the improvements in germination, bolting, efflorescence, rosette-formation, and cut flower length.

ISSUE

Whether claims 1-6 and 13 are unpatentable over Kohno et al. in view of Skarpaas under 35 U.S.C. §103(a).

Whether claims 7-12 are unpatentable over Kohno et al. "as applied to claim 1" and further in view of Asano 35 U.S.C. §103(a).

GROUPING OF CLAIMS

Claims 1-6 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kohno et al. in view of Skarpaas and therefore stand or fall together under this rejection.

Claims 7-12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kohno et al. "as applied to claim 1" and further in view of Asano and therefore stand or fall together separately from claims 1-6 and 13 under this rejection.

THE REFERENCES

The following references are relied upon by the examiner:

U.S. 5,701,700	Kohno et al.	Dec. 30, 1997
U.S. 5,525,131	Asano.	Jun. 11, 1996

Skarpaas, *Population Viability Analysis for the Oyster Plant (Mertensia maritime) in the Oslofjord Region* (1998)

BRIEF DESCRIPTION OF THE REFERENCES

Kohno et al. discloses a method of storing gel-coated seeds which seeds are encapsulated in an aqueous gel which is water-insolubilized by a metal ion. The encapsulated seed is stored in a storage solution that has an osmotic pressure which is varied by adding various salts thereto which are listed at column 3, lines 1-9. The storage solution is selected so as not to have an adverse influence on the compressive breaking strength of the gel coating.

At column 3, lines 51-54 Kohno et al. teach that the stored, gel-coated seeds exhibited an equal rate of germination and sticking out to gel-coated seeds which were not stored.

Asano discloses seeds that are coated with a clay mineral having a double chain structure which coagulates to a suitable degree of hardness in the presence of a hydrophobic compound. Suitable hydrophobic compounds are listed at column 3, lines 26-39.

Skarpaas is directed to a population viability analysis of a specific, herbaceous perennial plant (*Mertensia maritime* - "Oyster Plant") that is native to the beaches of southern Norway and drops "nutlets" into the ocean so that the nutlets float for a very long period of time (several months) in 3% salt water. The analysis focused on the manner in which the plant self-pollinates by autodeposition.

THE REJECTIONS

Claims 1-6 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kohno et al. in view of Skarpaas.

Under this rejection the examiner has relied upon Kohno et al. as teaching a method of encapsulating plant seeds in an aqueous gel capsule, followed by refrigerating the encapsulated seeds and thereafter sowing the seeds.

Skarpaas has been relied upon as teaching that a cold period is necessary to break seed dormancy and that prolonged cold treatment enhances germination.

In combining the teachings of Kohno et al. and Skarpaas, the examiner takes the position that:

...it would have been obvious....to modify the storage duration under cold temperatures through routine tests and experimentation to a length that enhances germination as taught by Skarpaas.”

7-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kohno et al. “as applied to claim 1” and further in view of Asano.

Under this rejection the examiner has relied upon Asano as teaching that it is old and well known in the art of plant husbandry to pelletize a seed.

In combining the teachings of Kohno et al. and Asano, the examiner has taken the position that:

It would have been obvious to....apply the gel coating of Kohno et al to the pelletized seed of Asano for the mechanized and economical distribution of the seeds in the field.

ARGUMENT

It is respectfully submitted that the prior art relied upon by the examiner does not render appellants’ claimed invention obvious under 35 U.S.C. §103(a) inasmuch as none of the references alone or in combination teach or otherwise suggest the structural limitations set for in appellants’ pending claims.

The examiner has relied upon Kohno et al. as teaching

...a method of encapsulating at least one plant seed in an aqueous gel capsule (Kohno Col. 1 line 10-20); refrigerating the plant seeds under the condition that the plant seeds do not germinate (Kohno Col. 4 line 39); and sowing the plant seeds (Kohno Col. 1 line 21-25 and Col. 3 line 27-36).

The examiner concedes that “Kohno et al does not explicitly state that the method prevents defective germination or growth of a plant.”

“However,...” the examiner states that “it is notoriously old and well-known in the art of plant husbandry that cold breaks dormancy and provides for a more uniform and enhanced germination.”

The examiner states that Skarpaas is cited:

“...merely to illustrate accepted wisdom in the field.”

The examiner goes on to state that Skarpaas is cited:

...solely to teach that a cold period is necessary to break seed dormancy and that prolonged cold treatment enhances germination (Skarpaas abstract second sentence of second paragraph).

In combining the teachings of Kohno et al. and Skarpaas, the examiner takes the position that:

...it would have been obvious....to modify the storage duration under cold temperatures through routine tests and experimentation to a length that enhances germination as taught by Skarpaas.”

Kohno et al. is only interested in storing gel-coated seeds in a manner that does not adversely affect the yield and handling properties of gel-coated seeds.

It is important to note that a particular problem addressed and solved by Kohno et al. was that if gel-coated seeds were stored under the same general conditions used for non-coated seeds, the gel coating on the coated seeds loses water and becomes hardened. As a result, it becomes difficult for a bud or root sprouted from the seed to pierce through the coating. (Column 1, lines 25-32). Kohno et al. accordingly stores the seeds in a storage solution.

Kohno et al. utilizes an aqueous gel coating composition that is rendered water-insoluble by metal ions. In order to ensure that the storage solution does not adversely affect the gel coating, the storage solution is provided with an osmotic pressure by adding salts listed at column 3, lines 1-9 therein.

In confirming that the storage solutions does not adversely effect the yield of the gel-coated seeds, Kohno et al. conducted comparative tests and concluded that:

The gel-coated seeds thus stored exhibit equal rate of germination and rate of sticking out to those of the gel-coated seeds immediately after preparation. (Column 3, lines 51-54).

The fact the Kohno et al. conducted comparative tests and concluded that the gel-coated seeds that were stored exhibited a rate of germination that was “equal” to that of non-stored seeds establishes that the process of Kohno et al. does not inherently improve germination of the gel-coated seeds.

Moreover, Kohno does not otherwise teach that the disclosed method improves germination or that there is any intent or goal to improve germination.

Kohno accordingly cannot be (and if fact has not been) relied upon alone for rendering appellants’ claimed invention anticipated or obvious.

Moreover, the fact that Kohno et al. conducted comparative tests and concluded that the germination rates of stored and non-stored seeds was “equal” is evidence that appellants’ invention is unexpected over the teachings of Kohno et al. and therefore clearly unobvious.

The examiner has conceded that “Kohno et al does not explicitly state that the method prevents defective germination or growth of a plant” and has accordingly relied upon Skarpaas as teaching that a cold period is necessary to break seed dormancy and that prolonged cold treatment enhances germination.

The examiner's has stated and taken the position that:

...it is notoriously old and well-known in the art of plant husbandry that cold breaks dormancy and provides for a more uniform and enhanced germination.

The Examiner's position is not supported by any prior art reference.

However, it is noted that Kohno discusses storage temperatures at column 3, lines 27-36 and states that "...such low temperatures tend to adversely affect germination of the seeds." And that the "allowable storage period is extended at temperatures of 10°C or lower, while varying depending on the kind of seeds."

It is thus submitted that the teachings of Kohno are contrary what the examiner alleges to be "notoriously old and well known."

It is particularly noted that Kohno, who is concerned with not adversely affecting germination and who completely fails to mention improving germination, does teach that storage temperatures and periods of time vary based on the "kind of seeds"

From this recognition, it is submitted that the teachings of Skarpaas which are directed to "nutlets" (discussed below) are not germane to Kohno because storage temperatures and periods of time vary based on the "kind of seeds"

Moreover it is submitted that the examiner's position that "to modify the storage duration under cold temperatures [or Kohno] through routine tests and experimentation to a length that enhances germination as taught by Skarpaas" is improper.

It is submitted that, based upon Kohno's lack of guidance (or mentioning) as to improving germination and Skarpaas' teaching of particular "nutlets" that are unrelated to the radish seeds taught by Kohno, there it is no basis for the examiner's position that "routine tests and experimentation" would render appellants' claimed invention obvious.

If, as the examiner states “it is notoriously old and well-known in the art of plant husbandry that cold breaks dormancy and provides for a more uniform and enhanced germination,” the examiner should be able and be required to rely upon a prior art teaching that is related to Kohno and not rely upon Skarpaas. Appellants’ right to rebut the examiner is prejudiced if the examiner relies upon unsupported allegations and not prior art references.

Skarpaas is directed to a study of a specific, herbaceous perennial plant (*Mertensia maritime* “oyster plant”) that drops “nutlets” into the ocean so that the nutlets float for a very long period of time (several months) in 3% salt water. According to a standard dictionary definition (See www.webster.com) a “nutlet” is: “1 a : a small nut b : a small fruit similar to a nut” A “nut” is “1 a (1) : a hard-shelled dry fruit or seed with a separable rind or shell and interior kernel.”

Skarpaas is specifically interested in studying the manner in which the oyster plant reproduces and disperses.

In the working examples, Kohno et al teaches the use of radish seeds.

It is submitted that Kohno et al.’s radish seed is not at all comparable to the nutlet of Skarpaas or to any nut or nutlet since radish seeds do not have hard shells and separable interior kernels.

There is no nexus between the radish seed of Kohno et al. and the nutlet of Skarpaas which supports the examiner’s assumption that the effect of allowing nutlets to float for very long periods of time (several months) in the ocean (3% salt water) would be the same if applied to radish seeds.

The only connection that has lead the examiner to consider combining the diverse teachings of Kohno et al. and Skarpaas is appellants’ own disclosure. Absent such improper

hindsight, one skilled in the art would never consider applying the teachings of Skarpaas to Kohno et al.

Certainly the hard, and relatively thick, shells of nuts and nutlets of plants which are native to the beaches of southern Norway are more resistance to that environment than the radish seeds of Kohno et al., so that it cannot be merely assumed that each would be affected in a similar manner. There is simply no basis within the teachings of these references that supports such an assumption.

While it is true that any determination of obviousness involves aspects of hindsight inasmuch as one must always compare the claimed invention and its solution with the most relevant prior art before the assessment of the “inventive step” in order to objectively determine the problem to be solved by the claimed invention, it is impermissible to rely upon hindsight to reconstruct an appellant’s claimed invention by combining teachings from prior art references, which prior art references themselves do not provide any motivation or suggestion for the combination.

That is, it is impermissible to rely upon an appellant’s own disclosure as a blueprint to reconstruct an appellant’s claimed invention from isolated teachings found in the prior art.

Obviousness has to be based upon what the prior art references themselves teach or suggest, absent any reliance at all upon an appellant’s disclosure.

An examiner cannot rely upon the benefit of hindsight as a substitute for some motivation or suggestion found within the teachings of the prior art that supports the obviousness of their combination.

In light of the above, it is urged that the teachings of Skarpaas are not at all related to the teachings Kohno et al., because radish seeds are not comparable to the nutlet of Skarpaas or any nut or nutlet since radish seeds do not have hard shells and separable interior kernels.

Furthermore, one would not consider or envision having radish seeds float for very long periods of time (several months) in the ocean (3% salt water) off southern Norway upon reading the teachings of Skarpaas, much less expect any beneficial results to be achieved thereby.

Kohno et al. teaches that the storage treatment discussed at beginning at column 3, line 28, *et seq.* produce seeds that have a germination rate that is “equal” to the germination rate of seeds that are not stored. (See column 3, lines 51-54) This echoes the statement at column 2, lines 53-56 that there is substantially no change in the properties of the seeds.

In actuality it is submitted that Kohno et al. fails to teach any benefit in germination caused by the storage process, even though Kohno et al. conducted comparative tests to determine effect on germination.

While Skarpaas teaches that a cold period is needed to break dormancy, the teachings of Skarpaas are limited to the oyster plant (*Mertensia maritime*).

For the reasons set forth above, the teaching of Skarpaas are not germane to Kohno et al.

The examiner has stated that so long as a reconstruction of an appellant’s invention “takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant’s disclosure, such a reconstruction is proper.”

In the present situation the “knowledge” that is within the level of ordinary skill on the record is:

1) Kohno teaching that storage at cold temperatures can adversely effect seeds and that the adverse affect associated with storage time is different for different seeds; and

2) Skarpaas teaching floating a particular seed “nutlet” in 3% salt water for several months.

From these two diverse bits of knowledge it is not seen how appellants’ invention can be permissibly reconstructed without improper reliance upon appellants’ own disclosure.

The examiner cites *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971) as holding that as long as an examiner’s conclusion of obviousness “takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the appellant’s disclosure, such a reconstruction if proper.”

In re McLaughlin involved a rejection under 35 U.S.C. §103 of a claim directed to railroad box car having an arrangement of filling panels that allowed a car to be loaded and unloaded simultaneously from both sides.

The court of appeals found primary reference to Cook indicated that the car shown therein is suitable for carrying palletized loads with lift trucks being used for the loading and unloading, including the stacking of the pallets. The secondary references show that it was well known to use side filler panels and bulkheads to confine palletized loads to prevent lateral and longitudinal shifting.

It is important to note that in *In re McLaughlin* each of the prior art references directed to railroad car structures which the court of appeals found were properly combinable in the examiner’s rejection.

In the present situation, the teachings of Skarpaas and Kohno et al. are not related as was the prior art in *In re McLaughlin*. Skarpaas involves oyster plant “nutlets” that are allowed to float in the ocean off southern Norway for several months. Skarpaas teaches that this process breaks the dormancy of the nutlets.

Kohno et al. is directed to a process for storing gel-coated radish seeds that are placed in a storage solution for a limited number of days. Kohno et al. report that the storage-treated seeds exhibit a germination rate that is equal to non-stored seeds.

These differences negate the ability of the examiner to properly rely upon the holding in *In re McLaughlin*. The knowledge that gel-coated radish seeds could benefit from being stored in a cold liquid solution is not found in Skarpaas or Kohno et al. alone or in combination.

Absent this knowledge being found in the prior art, it can only be concluded that appellants’ own disclosure has suggested the combination. This follows the holding in *In re McLaughlin* which supports appellants’ position that the prior art as been improperly combined and the outstanding rejection of the claims should accordingly be withdrawn.

The examiner’s further reliance upon Asano does not address or overcome the deficiencies noted above related to the teachings of Skarpaas and Kohno et al.

Asano has been relied upon by the examiner as teaching that it is well known to pelletize a seed.

The examiner takes the position that it would have been obvious to apply the gel coating of Kohno et al. to the pelletized seed of Asano for “the mechanized and economical distribution of the seeds in the field.”

Contrary to the examiner’s position of obviousness, appellants note that it is very difficult to carry out a refrigeration treatment for a pelletized seed prior to sowing, because pelletized

seeds formed with clay materials per Asano would tend to dissolve during the preservation in the cooling solutions of Kohno et al.

The examiner states that:

Examiner disagrees with applicant's argument that the pelletized seed would dissolve during preservation. Kohno teaches that the encapsulated seed is stored in a solution of metal ions (Kohno Col. 2 line 19-39 and abstract). The metal ion, also taught by Asano (Asano Col. 1 line 35-45), is a water proofing compound that would prevent the palletized seed from dissolving prematurely in the preservation solution.

The portion of Asano referred to by the examiner is in the background section. In the paragraph following the portion of Asano cited by the examiner, Asano teaches that the prior art determined that it was necessary to include an organic binder in addition to the water proofing compound.

Asano specifically contrast his invention against the prior art by not using an organic binder.

At Column 3, lines 26-39 Asano teaches hydrophobic compounds which are different from those listed in the passage of Asano cited by the examiner. It appears that the clay mineral used by Asano requires different hydrophobic compounds than the prior art mentioned by Asano.

It follows that the teachings of Asano do not support the examiner's position that it would have been obvious to apply the gel coating of Kohno to the palletized seed of Asano.

The examiner has cited several "additional" references which the examiner states teach "it is notoriously old and well-known in the art that cold breaks seed dormancy."

The Skarpaas abstract is directed to the oyster plant and is not believed to be similar to the Skarpaas reference relied upon above.

The Rehman et al. reference involves a comparison between scarified and unscarified seeds and is not believed to be relevant.

The Angelgrove Tree Seed Company reference discusses tree seeds and note that “stratification of tree seeds is not an exact science.” This reference further teaches that it is important to thoroughly but “only slightly dampen” the vermiculite that the seeds were germinated and that it is better to “err on the side of a bit drier rather than wetter.” These teachings seem to distinguish over Kohno and Skarpaas who use solutions to soak the seeds in.

CONCLUSION

For the reasons advanced above, appellants respectfully contend that the rejection of claims 1-6 and 13 as being obvious under 35 U.S.C. §103(a) over Kohno et al. in view of Skarpaas is improper because the examiner has not met the burden of establishing a *prima facie* case of obviousness.

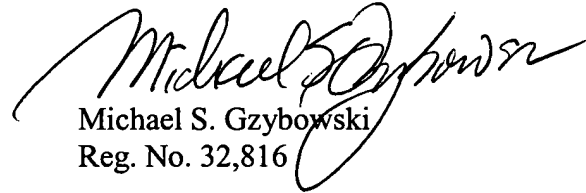
Moreover, for the reasons advanced above, appellants respectfully contend that the rejection of claims 7-12 as being obvious under 35 U.S.C. §103(a) over Kohno et al. “as applied to claims 1, in view of Asano is improper because the examiner has not met the burden of establishing a *prima facie* case of obviousness.

Reversal of each of the rejections on appeal is respectfully requested.

To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge the fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account No. 12-2136 and please credit any excess fees to such deposit account.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael S. Gzybowski". The signature is fluid and cursive, with a large, sweeping initial "M".

Michael S. Gzybowski
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CLAIMS ON APPEAL

Claim 1. A method of preventing defective germination or growth of a plant comprising the steps of:

encapsulating at least one plant seed in an aqueous gel capsule;

refrigerating the at least one plant seed under the condition that the at least one plant seed does not germinate; and

sowing the at least one plant seed.

Claim 2. The method of preventing defective germination or growth of a plant according to claim 1, wherein the size of the at least one plant seed is equal to or less than 1 mm.

Claim 3. The method of preventing defective germination or growth of a plant according to claim 1, wherein the refrigeration is carried out in a dark place.

Claim 4. The method of preventing defective germination or growth of a plant according to claim 2, wherein the refrigeration is carried out in a dark place.

Claim 5. The method of preventing defective germination or growth of a plant according to claim 3, wherein the at least one plant seed is a seed of a light germinator.

Claim 6. The method of preventing defective germination or growth of a plant according to claim 4, wherein the at least one plant seed is a seed of a light germinator.

Claim 7. The method of preventing defective germination or growth of a plant as claimed in claim 1, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 8. The method of preventing defective germination or growth of a plant as claimed in claim 2, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 9. The method of preventing defective germination or growth of a plant as claimed in claim 3, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 10. The method of preventing defective germination or growth of a plant as claimed in claim 4, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 11. The method of preventing defective germination or growth of a plant as claimed in claim 5, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 12. The method of preventing defective germination or growth of a plant as claimed in claim 6, wherein the at least one plant seed encapsulated in an aqueous gel capsule is a pelletized seed.

Claim 13. The method of preventing defective germination or growth of a plant according to claim 1, wherein the step of refrigerating the at least one encapsulated plant seed is conducted at a temperature of about 15°C or lower and for a sufficient period of time to improve the germination of the at least one encapsulated plant seed as compared to non-refrigerated encapsulated plant seeds.